

**REMARKS**

Claims 1, 4, 5, 6, 9, and 10 are pending in this application. Claims 2, 3, 7 and 8 have been canceled. Reconsideration of the rejections in view of these amendments and the following remarks is respectfully requested.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment, which is captioned "Version with Markings to Show Changes Made."

**Rejections under 35 USC §103(a)**

Claims 1-10 were rejected under 35 U.S.C. §103(a) as being obvious over Hoffman (U.S. Patent No. 4,645,960) in view of JP '849 (JP 10-159849).

First, claim 1 has been amended for clarification to recite "a substantially solid porous sleeve parallelly faced to the shaft forming a bearing portion with a minimum gap provided therebetween;" and "a ferromagnetic substance included in the shaft is locally magnetized so as to create magnetic flux density gradient that is set at a maximum along the bearing portion of the porous sleeve and decreases gradually as it stays away therefrom."

Also, claim 1 has been further amended to incorporate the limitations of claims 2 and 3 reciting "wherein a boundary of a magnetization-varying portion of the shaft is aligned with a line of a flow of the magnetic fluid oil occurring with rotary motion of the sleeve or the shaft," and "wherein the bearing portion has a groove for generating dynamic pressure formed on a surface of the shaft or the sleeve, and a

magnetization-varying portion is arranged in a position of the shaft that corresponds to the groove” Claim 6 also has been similarly amended.

The Office Action has alleged that “Hoffman does not discloses [sic] the shaft magnetized in a direction parallel to the shaft” indicating that Hoffman discloses all other recitations. JP ‘849 has been cited for disclosing “the shaft magnetized in a direction parallel to the shaft.” However, it is not just “the shaft magnetized in a direction parallel to the shaft” that Hoffman fails to disclose.

Hoffman also fails to disclose “a substantially solid **porous sleeve** including a ferromagnetic material.” Also, in Hoffman, the ferromagnetic substance included in the shaft is **NOT locally magnetized**, but the magnetization is **uniform over the bearing portion**.

Thus, Hoffman fails to disclose the entire recitation of “a ferromagnetic substance included in the shaft is **locally magnetized** in a direction parallel to the shaft so as to create **magnetic flux density gradient** that is set at a **maximum along the bearing portion** of the porous sleeve and decreases gradually as it stays away therefrom.”

Moreover, Hoffman discuss nothing about that a boundary of a magnetization-varying portion is aligned with a line of a flow of the magnetic fluid oil occurring with rotary motion of the sleeve or the shaft, or that the bearing portion has a groove for generating dynamic pressure formed on a surface of the shaft or the sleeve, and a magnetization-varying portion is arranged in a position that corresponds to the groove, which have been recited in amended claims 1 and 6.

JP ‘849 discloses an active magnetic bearing, which is a completely different type of a magnetic bearing. In JP ‘849, there is no oil or sleeve at all. It is magnetic pole that looks like a sleeve. The bearing

is designed to support the shaft utilizing the magnetic attraction or the repulsive force controlling the position of the shaft with control circuitry. Coil 24 is a part of electro magnet and is driven by the control circuitry to add another magnetic flux to stabilize the shaft attitude and position. A bearing portion with a minimum gap provided between the sleeve and the shaft parallelly facing to each other correspond to reference numeral 212 or 222. The magnetic flux density gradient, however, is not at a maximum along the bearing portion. In JP '849, the magnetic flux flows through the flanges 11 and 13 attached to the shaft. The magnetic flux density gradient is at its maximum along the surface facing the flanges but not the portion 212 or 222.

Thus, JP '849 does not teach or suggest “a substantially solid **porous sleeve faced in parallel** with the shaft forming a bearing portion with a minimum gap provided therebetween,” “**magnetic fluid oil** impregnated into the gap and the porous sleeve,” and “a ferromagnetic substance included in the shaft is locally magnetized in a direction parallel to the shaft so as to create **magnetic flux density gradient** that is set at a **maximum along the bearing portion** of the porous sleeve and decreases gradually as it stays away therefrom.” Also, because JP '849 discloses a completely different type of a magnetic bearing, there is no reason or motivation to combine the teaching of JP '849 with Hoffman.

Although the Office Action rejected claims 2, 3, 7 and 8, the features of which have been incorporated into amended claims 1 or 6, the Office Action does not specifically point out which recitation correspond to the disclosures of Hoffman and JP '840. The Examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness, and the Office Action has not established a *prima facie* case of obviousness.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some **suggestion or motivation** either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a **reasonable expectation of success**. Finally the prior art reference (or references when combined) must teach or suggest **all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.

*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). In a more logical order, (1) the prior art reference (or references when combined) must teach or suggest **all the claim limitations**; (2) there must be some **suggestion or motivation** either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; and (3) there must be a **reasonable expectation of success**.

Moreover, despite the Examiner's allegation, JP '849 discloses nothing indicating that a boundary of a magnetization-varying portion is aligned with a line of a flow of the magnetic fluid oil occurring with rotary motion of the sleeve or the shaft, or that the bearing portion has a groove for generating dynamic pressure formed on a surface of the shaft or the sleeve, and a magnetization-varying portion is arranged in a position that corresponds to the groove. Thus, the rejections of original claims 2, 3, 7 and 8 were improper.

For at least these reasons, claims 1 and 6 patentably distinguish over Hoffman and JP '849. Claims 4, 5, 9 and 10, depending from claim 1 or 6, also patentably distinguish over the cited references.

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If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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